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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,900	09/22/2006	Han Oh Park	27681U	5781
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EXAMINER STRZELECKA, TERESA E				
ART UNIT 1637		PAPER NUMBER		
MAIL DATE 10/26/2009		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/593,900

Applicant(s)

PARK ET AL.

Examiner

TERESA E. STRZELECKA

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-34 is/are pending in the application.
4a) Of the above claim(s) 9-34 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4, 6 and 7 is/are rejected.
7) ☒ Claim(s) 8 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-850)
Paper No(s)/Mail Date 7/7/09
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to an amendment filed July 27, 2009. Claims 1-34 were previously pending, with claims 9-34 withdrawn from consideration. Applicants cancelled claim 5 and amended claims 1, 4 and 6. Claims 1-4 and 6-8 will be examined.
2. Applicants' amendments overcame the following rejections: rejection of claim 5 under 35 U.S.C. 102(b) as anticipated by Mergny et al. and the rejection of claim 6 under 35 U.S.C. 112, second paragraph. All other previously presented rejections are maintained for reasons given in the "Response to Arguments" section below.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on July 7, 2009 was filed after the mailing date of the non-final office action on April 27, 2009. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Arguments

4. Applicant's arguments filed July 27, 2009 have been fully considered but they are not persuasive.

A) Regarding the rejection of claim 4 under 35 U.S.C. 112, first paragraph, written description and enablement, Applicants argue that amendments to the claim removing the limitations of derivatives with respect to all of the dyes with the exception of cyanine dyes overcame the rejections, since Applicants described a single derivative of a cyanine dye in the specification.

However, a single derivative is not representative of thousands of possible species, since the term "cyanine dye" alone encompasses a large number of different dyes.

The rejection is maintained.

B) Regarding the rejection of claims 1-4, 6 and 7 under 35 U.S.C. 102(b) as anticipated by Mergny et al., Applicants argue that Mergny et al. do not teach the newly added limitation of claim 1, where the fluorescent dye "replaces at least a base of a nucleotide". Applicants did not define what it means for a dye "to replace a base". Does it mean that there is a gap in the phosphodiester backbone and the dye is attached there, or that a base of a nucleotide is replaced by a dye? In view of the above, since Mergny et al. teach attaching dyes to both 3' and 5' ends of an oligonucleotide, they inherently teach replacing a base with the dye.

The rejection is maintained.

Claim Interpretation

5. Applicants did not define what it means to "replace a base" with a fluorescent dye, therefore any attachment of the dye to oligonucleotide is considered to anticipate this limitation.

6. The term "base" is interpreted as "nucleotide", since Applicants did not define it, and the claims and specification seem to use it in this context.

7. The limitation of claim 1 "for real-time detection of amplification of nucleic acid" is not taken into account when comparing the claimed product with the prior art, since it is an intended use limitation and does not impart any further structural limitation on the claimed product. Therefore the structure claimed in claim 1 is an oligonucleotide with a fluorescent dye attached to it either covalently or non-covalently.

8. The limitation of claim 6 is not taken into account when comparing the claimed oligonucleotide with prior art, since it refers to an intended use of the oligonucleotide and does not impart any further structural limitation on the claimed product.

9. The term "composed of" is interpreted as "comprising".

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In analysis of the claims for compliance with the written description requirement of 35 U.S.C. 112, first paragraph, the written description guidelines note regarding genus/species situations that "Satisfactory disclosure of a ``representative number" depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed." (See: Federal Register: December 21, 1999 (Volume 64, Number 244), revised guidelines for written description.)

All of the current claims encompass a genus of fluorescent dyes which are different from the ones disclosed in the specification or known in the prior art. While the fluorescent dyes such as cyanines are known in the art, Applicants have described only a single derivative of the claimed cyanine dyes. Therefore the genus includes variants for which no written description is provided in the specification. This large genus is represented in the specification by only the particularly named fluorescent cyanine dyes known in the art. Thus, applicant has express possession of only one cyanine dye derivative, in a genus which comprises hundreds of millions of different possibilities. Here, no common element or attributes of the structures are disclosed, not even the presence of

certain functional groups. No structural limitations or requirements which provide guidance on the identification of structures which meet these functional limitations is provided.

In Vas-Cath Inc. v. Mahurkar (19 USPQ2d 1111, CAFC 1991), it was concluded that:

"...applicant must also convey, with reasonable clarity to those skilled in art, that applicant, as of filing date sought, was in possession of invention, with invention being, for purposes of "written description" inquiry, whatever is presently claimed."

In the application at the time of filing, there is no record or description which would demonstrate conception of any fluorescent dyes other than those expressly disclosed. Therefore, the claims fail to meet the written description requirement by encompassing structures which are not described in the specification.

Finally, as stated in *In re Ruschig, Aumuller, Korger, Wagner, Scholz, and Bander*, 154 USPQ 118 (C.C.P.A. 1967):

"It is an old custom in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail or in finding one's way through the woods where the trails have disappeared- or have not yet been made, which is more like the case here-to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none." (page 123).

In other words, Applicants have provided a structure of a single cyanine dye derivative, but have not provided any direction or guidance as how to obtain any other derivatives, or even what such derivatives may be.

12. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The term "derivative" used with respect to all of the claimed fluorescent dyes critical

or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Applicants have provided a single structure of the claimed cyanine dyes derivatives. No other structures or guidance of how to obtain such derivatives was presented.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Mergny et al. (Nucl. Acids Res., vol. 22, pp. 920-928, 1994; cited in the previous office action) as evidenced by Morgan et al. (Nucl. Acids Res., vol. 7, pp. 547-569, 1979).

Regarding claims 1 and 6, Mergny et al. teach an oligonucleotide probe with a fluorescent dye, such as ethidium bromide, attached to it (page 921, sixth paragraph; Fig. 1). As evidenced by Morgan et al. (page 547, first paragraph), fluorescence of ethidium bromide increases when it is bound to double-stranded DNA. Since Applicants did not define what it means for the dye to replace a base, any attachment of the dye to the oligonucleotide anticipates this limitation, and Mergny et al. teach the fluorescent dye connected covalently either at the 3'- or 5'-ends (page 921, sixth paragraph; Fig. 1).

Regarding claim 2, Mergny et al. teach the fluorescent dye connected either at the 3'- or 5'-ends (page 921, sixth paragraph; Fig. 1).

Regarding claim 3, Mergny et al. teach the fluorescent dye connected either at the 3'- or 5'-ends (page 921, sixth paragraph; Fig. 1). Therefore, the oligonucleotides with the 3'-ends bound to the dye will not be amenable to extension by a polymerase.

Regarding claim 4, Mergny et al. teach ethidium bromide (Fig. 1).

Regarding claim 7, Mergny et al. teach 11-mers and 14-mers (Fig. 1), anticipating the range between 10 and 40 bp.

Allowable Subject Matter

15. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No references were found teaching or suggesting SEQ ID NO: 16, therefore claim 8 is allowable if re-written to reflect this fact.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERESA E. STRZELECKA whose telephone number is (571)272-0789. The examiner can normally be reached on M-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Teresa E Strzelecka
Primary Examiner
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/Teresa E Strzelecka/
Primary Examiner, Art Unit 1637
October 23, 2009